Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1-11 (Canceled)

Claim 12 (Currently Amended): A method of manufacturing a waveguide type optical element as claimed in claim 22 [[9]], wherein the impurity is Zinc.

Claim 13 (Currently Amended): A method of manufacturing a waveguide type optical element as claimed in claim 20 [[9]], wherein ~~in a case of~~ for oscillation with long wavelengths, the ~~wavelength, said~~ compound semiconductor layer[[,]] ~~said undope compound semicondutor layer, and said compound semiconductor substrate~~ and the clad layer are formed of InP.

Claim 14 (Currently Amended): A method of manufacturing a waveguide type optical element as claimed in claim 20 [[9]], wherein ~~in a case of~~ for oscillation with short wavelengths, the ~~wavelength, said~~ compound semiconductor layer[[,]] ~~said undope compound semicondutor layer, and said compound semiconductor substrate~~ and the clad layer are formed of GaAs.

Claim 15 (Canceled)

Claim 16 (Currently Amended): A method of manufacturing a waveguide type optical element as claimed in claim 20 [[9]], wherein an ~~InGaAsP layer~~ insulation film mask is grown on ~~said undope~~ the undoped compound semiconductor layer as an etching stop layer.

Claim 17 (Currently Amended): A method of manufacturing a waveguide type optical element as claimed in claim 20 [[9]], wherein an insulation layer is formed at the third areas on [[said]] the light absorption layer ~~at said side of said ridge part~~ where the clad layer has been removed.

Claim 18 (Currently Amended): method of manufacturing a waveguide type optical element as claimed in claim 20 [[9]], ~~wherein said compound semiconductor layer functions as a clad layer and~~ further comprising forming a contact layer ~~is formed~~ on [[said]] the clad layer.

Claim 19 (Currently Amended): A method of manufacturing an integrated optical waveguide type element integrating the [[said]] waveguide type optical element as claimed in any of claims ~~9 to 18~~ 12-14, 16-19 and 21-24 into an optical amplifier or an

optical modulator.

Claim 20 (New): A method of manufacturing a waveguide type optical element, comprising:

forming a light absorption layer on a compound semiconductor layer;

forming an undoped compound semiconductor layer on the light absorption layer, wherein the undoped compound semiconductor layer includes a first area, second areas located at both sides of the first area, third areas next to the second areas and fourth areas next to the third areas;

removing the undoped compound semiconductor layer in the first area to expose a part of the light absorption layer;

forming a clad layer on the exposed light absorption layer, and on the undoped compound semiconductor layer in the second, third and fourth areas;

removing the clad layer located on the undoped compound semiconductor layer in the third areas, and the undoped compound semiconductor layer in the third areas;

forming an insulating layer on the clad layer; and

forming an electrode on the insulating layer.

Claim 21 (New): A method of manufacturing a waveguide type optical element as claimed in claim 20, wherein said removing the clad layer forms a ridge portion of the

clad layer shaped as an inverted mesa, the ridge portion being above the light absorption layer at the first area and above the undoped compound semiconductor layer at the second areas.

Claim 22 (New): A method of manufacturing a waveguide type optical element as claimed in claim 20, wherein said forming a clad layer comprises adding an impurity to the clad layer as the clad layer is formed, whereby the impurity diffuses to the light absorption layer at the first area.

Claim 23 (New): A method of manufacturing a waveguide type optical element as claimed in claim 22, wherein said forming the clad layer comprises a metal phase epitaxy method.

Claim 24 (New): A method of manufacturing a waveguide type optical element as claimed in claim 17, wherein the insulation layer is a polymide.

Claim 25 (New): A method of manufacturing a waveguide type optical element

comprising:

forming a light absorption layer on a compound semiconductor layer;

forming an undoped compound semiconductor layer on the light absorption layer;

forming a window in the undoped compound semiconductor layer to expose the light absorption layer;

forming a clad layer on the undoped compound semiconductor layer and on the exposed light absorption layer in the window, an impurity within the clad layer diffusing through the window into the light absorption layer beneath the window;

selectively removing the clad layer so that an inverted mesa shaped ridge portion of the clad layer remains above the window;

forming an insulating layer over the clad layer after said selectively removing; and

forming an electrode on the insulating layer.

Claim 26 (New): A method of manufacturing a waveguide type optical element as claimed in claim 25, wherein said forming a clad layer comprises a metal phase epitaxy

method.

Claim 27 (New): A method of manufacturing a waveguide type optical element as claimed in claim 25, wherein for oscillation with long wavelengths, the compound semiconductor layer and the clad layer are formed of InP.

Claim 28 (New): A method of manufacturing a waveguide type optical element as claimed in claim 25, wherein for oscillation with short wavelengths, the compound semiconductor layer and the clad layer are formed of GaAs.

Claim 29 (New): A method of manufacturing a waveguide type optical element as claimed in claim 25, wherein the impurity is Zinc.